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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/577,702	04/28/2006	Masao Yanagawa	023174-0161	3178
22428	7590	05/09/2007		
FOLEY AND LARDNER LLP SUITE 500 3000 K STREET NW WASHINGTON, DC 20007			EXAMINER LEE, RIP A	
			ART UNIT 1713	PAPER NUMBER
			MAIL DATE 05/09/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/577,702

Applicant(s)

YANAGAWA ET AL.

Examiner

Rip A. Lee

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 04-28-2006.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. There is insufficient antecedent basis for the term "the olefin" in the claim.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, 5, 7, and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Khotimskii *et al.* (SU 1690365).

Khotimskii *et al.* discloses a catalyst comprising the contact product of equimolar amounts (0.54 mmole) of TaCl<sub>5</sub> and *sec*-BuLi (Table 1, entry 7).

5. Claims 1-5, 7, and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Oberkirch *et al.* (U.S. 3,719,652).

Oberkirch *et al.* teaches a catalyst comprising a tantalum compound (TaCl<sub>5</sub>, TaCl<sub>4</sub>, TaOCl<sub>3</sub>, TaBr<sub>5</sub>, TaI<sub>5</sub>) and an organoaluminum compound such as EtAlCl<sub>2</sub> and *i*-BuAlCl<sub>2</sub> (col. 1, lines 16-18 and 50-53) for polymerization of cyclopentene. The tantalum/organoaluminum ratio is 1:0.5-15 (col. 1, line 56). Catalysts containing *i*-BuAlCl<sub>2</sub> meet the limitations set forth in the instant claims.

6. Claims 1-7 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Valvassori *et al.* (U.S. 3,900,452).

The prior art of Valvassori *et al.* relates to preparing polyolefin in the presence of a catalyst comprising the contact product of a group III organometallic compound and a transition metal complex of group V selected from the group consisting of V, Nb, and Ta (claims 16). The group III organometallic compounds *i*-Bu<sub>3</sub>Al, *i*-Bu<sub>2</sub>AlCl, *i*-Bu<sub>2</sub>AlH, and *bis*(dicyclopentylmethyl)aluminum chloride are exemplary (col. 4, lines 33-45). Following the practical guidelines set forth in the working examples, catalysts contain an organoaluminum/transition metal ratio of 1-5 for trialkylaluminum species (col. 6, line 24). The subject matter of the instant claims is anticipated by Valvassori *et al.* because the patent discloses explicitly each component. See *Ex parte A*, 17 USPQ2d 1716 (BPAI 1990).

#### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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9. Claims 8 and 10-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khotimskii *et al.* in view of Andes *et al.* (*J. Am. Chem. Soc.*, 2001).

Khotimskii *et al.* discloses a catalyst comprising the contact product of equimolar amounts of TaCl<sub>5</sub> and *sec*-BuLi. Other catalysts are prepared using isomeric *n*-BuLi and *t*-BuLi. The catalysts described in Khotimskii *et al.* are used for polymerization of 1-trimethylsilyl-1-propyne. The reference does not disclose other uses of the inventive catalyst.

Andes *et al.* teaches a composition comprising the contact product of TaCl<sub>5</sub> with *n*-BuLi or *t*-BuLi as an active catalyst for selective trimerization of ethylene to 1-hexene (Table 1, entries 8 and 9). One having ordinary skill in the art, having both references at his disposal, would have recognized that both teach the same catalysts TaCl<sub>5</sub>/*n*-BuLi and TaCl<sub>5</sub>/*t*-BuLi. The relevant difference between the two references is use of a catalyst of TaCl<sub>5</sub>/*sec*-BuLi. However, it would have been obvious to one having ordinary skill in the art to use the catalyst of Khotimskii *et al.* in a process for trimerization of ethylene because Andes *et al.* demonstrates that *n*-BuLi and *t*-BuLi as effective co-catalysts, and therefore, one having ordinary skill in the art would have expected use of isomeric *sec*-BuLi to work in the same capacity. A *prima facie* case of obviousness may be made when chemical compounds have very close structural similarities and similar utilities. An obviousness rejection based on similarity in chemical structure and function entails the motivation of one skilled in the art to make a compound, in the expectation that compounds similar in structure will have similar properties. *In re Payne*, 606 F.2d 303, 313, 203 USPQ 245, 254 (CCPA 1979). In sum, the combination of teachings is especially compelling, and it would have been obvious to one having ordinary skill in the art to combine teachings and arrive at the process recited in instant claims 8, 10, and 18.

The subject matter of remaining claims is obvious over the teaching in Andes *et al.* Polymerization conditions are typically carried out in chlorobenzene at a temperature of 45-60 °C using an ethylene pressure of 700 psi (4.8 Mpa); see page 7423, col. 1, paragraph 20. Thus, it would have been obvious to one having ordinary skill in the art to use the reaction conditions prescribed in the prior art because conditions appear to have been optimized to ensure acceptable product yield.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (571)272-1104. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (571)272-1114. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <<http://pair-direct.uspto.gov>>. Should you have questions on the access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

A handwritten signature in black ink, appearing to be 'Rip A. Lee', with a stylized, cursive script. The signature is written over the word 'ral'.

ral

May 3, 2007